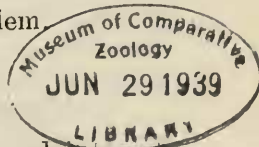


## NEW AND LITTLE KNOWN FORMS OF HEPIALUS MOSTLY FROM GREAT BRITAIN.

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(With Plt. VII.)



In presenting here the description of a number of new and interesting forms of *Hepialus*, I wish to express my sincerest thanks to our editor, Mr Hy. J. Turner, who very kindly and untiringly furnished me with extracts of some of the original descriptions mentioned below. In clearing up the different questions in connection with the Shetland forms of *Hepialus humuli*, it is also his merit to have discovered the right author of *H. thulensis*. (See also "Ent. Record," LI, p. 62 (1939).)

*Hepialus humuli*, L., ab. **roseornata**, ab. nov. (Fig. 1).

All pink markings very distinct, much enlarged and confluent. A continuous band along the subcosta reaching the costa just above the apex. The three patches at the base, below the cell and on the inner margin confluent. Oblique post-medial band to the apex also large and broad.

*Holotype*: ♀, Tavistock, July 1914, leg. A. T. Stiff.

Pfützner mentions in *Seitz*, Vol. II, p. 434, a similar form to which he erroneously attributes the authorship to Caradja as he writes: "Caradja describes a very beautiful (form) from Azuga in Roumania (54c)." As I could not find the original description of this form, I wrote to Prince Aristide Caradja, who very kindly replied to me, that he actually described this form in *Iris*, Vol. 8, p. 83-84, 1895, but did not name it. He wrote there: "I received gigantic specimens from Azuga where this species flies from 12th to 16th June; the largest ♂ measures 65 mm., the ♀♀ span even up to 73 mm. The latter ones have intense brick-red fascia . . . . The hindwings are rather dark in all of them."

Count of Caradja sent one of these females to Prof. Seitz who figured it on plate 54 and who intended to name this form after Caradja, but this seems to have been omitted during publication. From the description of Caradja, as cited above, it is clear that this form from Azuga (near Sinaia, 1100 m. elevation) is at least a distinct local variety; apparently Pfützner did not intend to name this form as is clearly indicated by his text and by the omission of the original citation, but as the name *azuga* is printed in heavy letters and also reprinted on the margin as it is always done with names of taxonomic value, and furthermore, the name *azuga* appears also below the figure on plate 54c, I think that the name *azuga*, therefore, has taxonomical value. Similar cases, where a form had to receive a name of taxonomical value which the author himself did not intend to apply, have been known before. I remember only the mut. *domestica*, Klimesch of *Sterrhia eburnata*, Wke. Here a dark mutation arose in captivity, which the author called for convenience in his genetical studies "mutatio domestica," and this name has been regarded, later on, as valid by several authors, i.e. Prout and Müller. The name *Hepialus humuli* var. *azuga*, Pfützner has therefore to be used for this fine Roumanian local race.

*H. humuli* ab. *roseornata* differs from var. *azuga* in being an individual aberration of the English population and no local variety. It is much smaller, measuring only 63 mm. The type of confluency of the

markings is entirely different from that of *azuga* as can readily be seen by comparing the figures 1 on the plate attached, and *Seitz*, Vol. II, pl. 54c. The hindwings are as greyish as in normal *humuli* ♀♀ and not darker as in *azuga*.

*Hepialus humuli*, L. ssp. *thulensis*, Newman, f. **uniformis** f. nov. and f. **albida** f. nov.

Considerable confusion has arisen in regard to the question, what name should be applied to the geographical race of *H. humuli*, L., which occurs in the Shetland Islands. Generally these specimens went under the name of *thuleus*, Crotch or *hethlandica*, Stgr. as quoted by Staudinger in the Staudinger-Rebel Catalogue, 1901. As these names were also quoted by Pfitzner in *Seitz*, Vol. II, p. 433, they came in general use though entirely wrong.

To clear up this matter I am giving here the original description by Edward Newman, published in *The Entomologist*, Vol. II, p. 162, February 1865:

"Abnormal series of *Hepialus humuli* taken in the Shetland Isles.

I have been led to doubt the accuracy of the conclusion at which Entomologists have arrived, that all specimens of *Hepialus humuli* with white wings are males, and all those with fulvous wings females. In some specimens the forewings are tinted with yellow, while the hindwings are pure white; in others the forewings are pure white, the hindwings dark fuscous. In those specimens supposed, from their general appearance, to be females, the tint is paler than in our southern specimens and more approaches a dull lemon-yellow than fulvous; the body is uniformly dark fuscous and the hindwings when tinted at all, are of the same dark colour."

"I would propose for them the name of *Hepialus thulensis* as a species."

In the next number of *The Entomologist*, Vol. II, March 1865, p. 136, Crotch only states that this is not a species, but gives no further description, and quotes the name in full as "*Hepialus humuli* var. *thulensis*."

From these quotations three points are evident:

1. That Newman and not Crotch is the specific author of var. *thulensis*.
2. That the correct name is var. *thulensis* and not "*thuleus*," which is a misprint by later authors, e.g. Staudinger and Pfitzner, and
3. That as the type form of var. *thulensis*, Newm. male specimens with a dull lemon-yellow colour must be chosen.

As the original description of Newman does not mention whether dark markings on the forewing are present or not, it was still impossible to determine the right form to which Newman applied his name, until Mr Turner kindly traced the original series in the British Museum Collection, from which Newman's description was made. Mr Turner kindly informs me that there is a male specimen labelled "*thulensis*, Crotch," with yellowish forewings and heavy brown markings as in fig. 3 of the plate. I am therefore choosing this specimen in the British Museum Collection as the type of ssp. *thulensis*, Newman.

Staudinger's diagnosis of the var. *hethlandica* in the Staudinger-Wocke Cat., 1871, and the Staudinger-Rebel Catalogue, 1901, p. 410: "♂ sim. in ♀ al. ant. flavidibus fulvo striatis" describes clearly the same form and is therefore a synonym to ssp. *thulensis*, Newman.

Ssp. *thulensis* varies considerably in respect to coloration and designs of the forewing. Three principal forms of ♂♂ may be distinguished by the following key:

1. Forewing yellow, heavily marked with dark designs :  
    ssp. *thulensis* f. *thulensis*, Newm. (syn. *hethlandica*, Stgr.)
2. Forewing yellow, without dark designs : ssp. *thulensis* f. *uniformis*
3. Forewing white, heavily marked with dark designs :  
    ssp. *thulensis* f. *albida*
- (4. Forewing white, without dark designs : ..... ssp. *humuli*, L.)

Spuler (*Schmetterlinge Europas*, Vol. II, 485) also mentions three different ♂ forms from the Shetlands without naming them :

- a. Forewings greyish ochreous white with distinct sepia-grey brown markings.
- b. Forewings yellowish white grey with dark ochreous yellow brown edged markings.
- c. Forewing ochreous brownish white with very few remnants of the brownish design.

Of these three forms, forms a and b probably correspond both to the f. *thulensis*, while form c is a transitus ad f. *uniformis*.

The descriptions of the two new forms mentioned above are as follows : *Hepialus humuli*, L. ssp. *thulensis*, Newm. f. **uniformis** f. nov. (Fig. 4).

Ground colour of the forewing ochreous yellow as in f. *thulensis*, Newm. but entirely without dark designs. Hindwing very dark grey.

*Cotypes* : 2 ♂♂, Shetland Isl., leg. 1909.

*Hepialus humuli*, L. ssp. *thulensis*, Newm. f. **albida** f. nov. (Fig. 2).

Ground colour of the forewing silky-white as in *humuli*, L. with distinct brown markings as in f. *thulensis*. The hindwings vary much from white to dark grey with a radial white suffusion from the base.

*Cotypes* : 7 ♂♂, Unst, leg. A. J. Hodges, July 1899, and Shetlands, 1909.

The distribution of the Shetland specimens of ssp. *thulensis* in regard to these three different forms in my collection is as follows : f. *thulensis*, 16 ♂♂ ; f. *albida*, 7 ♂♂ ; f. *uniformis*, 2 ♂♂ ; but as these series were not collected at random, f. *uniformis* may be considered as a still rarer form.

*Hepialus fusconebulosus*, de Geer ab. **latefasciatus** ab. nov. (Fig. 6).

One female has all the white markings confluent and enlarged. A broad white band from the base along the inner margin towards the apex, confluent with the spot on the end of the upper cell. A complete row of large and confluent subterminal and terminal spots. Hindwing uniform pale brown.

*Holotype* : ♀, Pitcaple, Scotland.

*Hepialus fusconebulosus*, de Geer ab. **ornatus** ab. nov. (Fig. 7).

One male has all the white markings also much enlarged and almost as confluent as in ab. *latefasciatus*, but has in addition on the hindwing two rows of post-medial and marginal white spots between the veins, which may be confluent and form radial streaks.

*Holotype* : ♂, Sligo, Ireland, leg. A. J. Hodges.

*Hepialus fusconebulosus*, de Geer, ssp. *vallei*, Grönblom. (fig. 16).

K. J. Valle described in the *Memoranda Societatis pro Fauna et Flora Fennica*, vol. 7, pp. 286-287, Helsingfors, 1931-1932, a new *Hepialus fusconebulosus* ssp. *hyperboreus*, of which he gives the following description :—



"The specimens of this species from the environment of Pummanki on the Fisher Peninsula (Petsamo district, Finland) differ markedly from more southern specimens. In the male the white markings on the forewing disappear more or less, the discal marking, especially the light discal spot, may remain. The female even more deviates from southern specimens, as there all designs become very inconspicuous and only traces of the cellular macula may be present. The colour of the upper side of the forewing is also somewhat different and more or less greyish rust red. . . . I propose for this arctic form the name *hyperboreus*."

As the name *hyperboreus* Valle is preoccupied by *Hepialus hyperboreus*, Möschler, Grönblom (*Act. Soc. Fn. u. Fl. fenn.*, LVIII, 1936, p. 43) changed this name into ssp. *vallei*, Grönblom, nom. nov. pro. ssp. *hyperboreus*, Valle.

Of this interesting arctic *fuscinebulosus* race I received a ♀ from the Rybatchi Peninsula, Murman Coast, 70° lat., 150 m., 1-15, VII, leg. Kotzsch, which agrees well with the description of Valle. The forewings are of an uniform dull greyish brown colour. Of the markings only an elongated white spot at the end of the upper cell present. On the first aspect this form resembles much more *H. carna*, Esp. (fig. 15) than *fuscinebulosus*, but the shape of the wing and the type of designs clearly indicate its relationship to *H. fuscinebulosus*.

*Hepialus lupulinus*, L. ab. **latemarginatus** ab. nov. (fig. 9).

Pfützner already mentions in *Seitz*, Vol. II, p. 436, that many of the English specimens of *lupulinus* tend to an enlargement of the white markings on the forewing. The extreme form with the whole forewing white he called ab. *senex*. I think that also an intermediate form is worth naming. It has a continuous band from the base along the inner margin and is confluent with the oblique postmedial band. This band is not separated in spots as in normal *lupulinus* and is at least twice as large as normally. The silvery spot in the cell is also much enlarged. In the terminal area a whitish subterminal band and a row of 6 white terminal spots.

*Cotypes*: 2 ♂♂, London District and Wicken, leg. A. J. Hodges.

*Hepialus hecta*, L. ab. **confluens** ab. nov. (fig. 11).

Of *H. hecta*, L. I have an interesting series of 11 ♂♂, 2 ♀♀ from Thundersley, Essex, which differ remarkably from specimens from the Continent and other English places. All ♂♂ have the silvery spots on the margin present in the following proportions:—3 specimens with 3 spots; 3 with 4; 4 with 5; and 1 with 6. One specimen is very dull brown and belongs to the ab. *flina*, H.-Sch.; 4 specimens have the marginal spots radially elongated and therefore belong to the ab. *decolorata*, Krul. In one specimen the series of postmedial spots forms a continuous band up to the apex.

Another specimen has the ante-medial and post-medial bands complete and conjoined by a transversal streak = ab. *confluens*.

*Holotype*: ♂, Thundersley, 6th July 1911, leg. A. T. Stiff.

